DETAILED ACTION

1. This Office Action is in response to the Applicants' communication filed on 4/20/2007. In virtue of this communication, claims 19-37 are currently presented in the instant application.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. The information disclosure statement (IDS) Form PTO-1449, filed on 8/18/2006 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 19-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over publication number US 2002/0131376 A1 to Wheatley et al. (hereinafter

Wheatley) in view of publication number US 2005/0265430 A1 to Ozluturk et al. (hereinafter Ozluturk).

With regard to claim 19, the limitation **"a radio communication system which includes a first radio access point, a second radio access point and a plurality of radio stations, each of the first and second radio access points having a respective coverage area"** is met (by Wheatley, Fig. 1, where a plurality of access points are shown serving a plurality of radio stations where each access point has its own cell area).

Wheatley teaches (par. 0071) that excess transmit power of an access point (AP, i.e. first radio access point) causes interference for an access terminal (AT, i.e. radio station) being served by and adjacent access point (SAP, i.e. second radio access point), which results in the access terminal observing a lower C/I. Reducing the transmit power of the access point would thus improve the C/I. Wheatley further teaches (par. 0072) that the AT reports excess C/I to the SAP so that the SAP can reduce it's transmit power. Wheatley further teaches (par. 0076-0077) that forward power control is performed. The AP can vary it's transmit power over time in synchronism with neighboring APs in the communication system.

Ozluturk teaches (par. 0506) that a ramp-up procedure can be used to establish a closed loop power control. A BS (i.e. first radio access point) transmits a pilot signal to an SU (i.e. radio station) which then in turn transmits a short code at a minimum power level and then begins to ramp up the transmit power until the BS detects the

signal. Upon detection, an acknowledgement is sent back to the SU (i.e. stop message) and the ramp up is ceased.

In view of the aforementioned teachings, one of ordinary skill in the art could have established a communication system implementing power control to perform the task of mitigating intercellular interference.

The SU performs a ramp-up procedure with a BS (as taught by Ozluturk). However, the reverse could also be easily implemented in view of Ozluturk for the purpose of power control. The BS could perform the ramp-up procedure and cease once receiving an ACK from the SU. Instead of increasing it's transmit power until the SU responds, the BS could perform the procedure until it receives a response from a neighbor cell's SU (**broadcasting broadcast signals from the first radio access point with increasing transmission power; and terminating increases in the transmission power as a result of a stop message from a radio station located within the radio coverage area of the second radio access point**). This would amount to excess transmit power as taught by Wheatley.

The excess transmit power of an AP would be detected by a neighbor AT which would impact its C/I. It would have been obvious to one of ordinary skill in the art that the AT could just as easily report a degradation in C/I as opposed to excess C/I (which is known in the art – downlink/forward power control). The SAP would then adjust it's transmit power accordingly in order to allow the AT to achieve a desired C/I. However, as taught by Wheatley, the access points (AP, SAP) can perform forward power control which can be performed in synchronism with each other. Therefore, it would have been

obvious to one of ordinary skill in the art for the SAP, upon receiving the C/I information from the AT, to adjust it's transmit power in synchronism with the AP. This could result in the AP reducing it's transmit power which would ultimately improve the C/I of the AT (**the stop message relating to: a broadcast signal from the first radio access point received at the radio station located within the radio coverage area of the second access point, and/or a response signal to the broadcast signal, which response signal was issued by a radio station located within the radio coverage area of the first radio access point and received at the radio station located within the radio coverage area of the second access point**).

The motivation for the combination is that both Wheatley and Ozluturk relate to methods of power control between access points and access terminals in a radio communication system.

Claim(s) 35-37 is/are rejected for the same reasons as set forth in claim 19 above, because they have similar limitations.

With regard to claim 20, the limitation "wherein the stop message describes a content of and/or a result of a measurement of: the broadcast signal from the first radio access point, and/or the response signal from the radio station located within the radio coverage area of the first radio access point" is met (by Wheatley, par. 0072, where the access terminal reports the C/I to the access point).

With regard to claim 21, the limitation ", wherein the first radio access point receives a response signal from each radio station located within the radio coverage area of the first radio access point that received a broadcast signal" is met (by Ozluturk, par. 0506, where and acknowledgement is sent).

With regard to claim 22, the limitation "wherein the radio station located within the radio coverage area of the second radio access point sends the stop message if the received power of the broadcast signal from the first radio access point or the response signal from radio station located within the radio coverage area of the first radio access point exceeds a threshold value" is met (by Wheatley and Ozluturk, par. 0071 and 0506 respectively, where the acknowledgement is sent upon detection and further where the C/I is reduced once the neighbor AP transmits too loudly. In order to detect or observe interference, there would be at least a minimum detectable signal (MDS) in order perceive any ill effects or provide an acknowledgement).

With regard to claim 25, the limitation "wherein the radio station located within the radio coverage area of the second radio access point transmits the stop message to a network-side device which differs from the first radio access point" is met (by Wheatley, par. 0071-0072, where the C/I information is transmitted to the serving access point which is different from the neighbor access point that is transmitting too loudly).

With regard to claim 26, the limitation "wherein the radio station located within the radio coverage area of the second radio access point is instructed by a message to detect receipt of broadcast signals from the first radio access point and/or response from radio stations located within the radio coverage area of the first radio access point" is met (by Wheatley and Ozluturk, par. 0071-0072 and 0506 respectively (see claim 19 rejection), where if the SAP is performing forward power control as a result of C/I information transmitted to it from an AT in synchronism with a neighbor AP, in order to determine if the C/I was at an acceptable level, it would be necessary to poll (i.e. instruct) the AT of it's new C/I, which would be an indirect way of instructing the AT to detect receipt of interfering signals from the neighbor AP).

With regard to claim 29, the limitation "wherein the first radio access point learns of the stop signal when a network-side device instructs the first radio access point via a message requesting the first access point to terminate the increases in transmission power" is met (by Wheatley and Ozluturk, par. 0071-0072 and 0506 respectively (see claim 19 rejection), where the ramp up of transmit power is ceased upon receiving an acknowledgement. The C/I information is transmitted to the SAP which then performs forward power control in synchronism with the neighbor AP, therefore the SAP (network side device) informs the neighbor AP).

With regard to claim 30, the limitation "wherein a network-side device informs the first radio access point, via a message, what transmission power the first radio

access point should use after terminating the increases in transmission power" is met by Wheatley and Ozluturk, par. 0071-0072 and 0506 respectively (see claim 19 rejection), where the ramp up of transmit power is ceased upon receiving an acknowledgement. The C/I information is transmitted to the SAP which then performs forward power control in synchronism with the neighbor AP, therefore the SAP (network side device) informs the neighbor AP and both mutually determine transmit power for each).

With regard to claim 31, the limitation "wherein a first radio frequency is used by the first radio access point to communicate with the radio stations located within the radio coverage area of the first radio access point, and the first radio frequency is used by the second radio access point to communicate with the radio stations located within the radio coverage area of the second radio access point" is met (by Wheatley, par. 0004, where the communication system is a CDMA system. CDMA systems use the same frequency across cells, hence the need for mitigating intercellular interference).

With regard to claim 32, the limitation "wherein if a distant radio station is located outside both the coverage area of the first radio access point and the coverage area of the second radio access point, then the distant radio station transmits messages to another radio station which forwards the messages" is met (by Wheatley, Fig. 1, where other radio stations are located in other cells which could then transmit C/I information to their respective AP (i.e. another radio station) which could then forward the message to the transmitting AP).

With regard to claim 33, Wheatley and Ozluturk do not explicitly teach the limitation "wherein a second radio frequency is used for the purpose of forwarding messages between radio stations." However Official Notice it taken of the fact that it is old and known to utilize a different frequency from the first frequency to communicate between radio stations.

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the Wheatley and Ozluturk invention by using a second radio frequency for the purpose of forwarding messages between radio stations. The motivation for the combination is to reach the goal of both Wheatley and Ozluturk, which is to utilize power control which can further be used to mitigate intercellular interference. Utilizing a different frequency between the radio stations for forwarding messages would further achieve that goal.

With regard to claim 34, the limitation "wherein a first radio frequency different from the second radio frequency is used by the first radio access point to communicate with the radio stations located within the radio coverage area of the first radio access point, and the first radio frequency is used by the second radio access point to communicate with the radio stations located within the radio coverage area of the second radio access point" is met (by Wheatley, par. 0004, where the communication system is a CDMA system. CDMA systems use the same frequency across cells, hence the need for mitigating intercellular interference).

6. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wheatley in view of Ozluturk as applied to claim 19 above, and further in view of publication number US 2004/0009785 A1 to Nelson et al. (hereinafter Nelson).

With regard to claim 23, Wheatley and Ozluturk do not explicitly teach the limitation "wherein each broadcast signal identifies the first radio access point and the transmission power used for the broadcast signal." However, attention is directed to Nelson (which teaches, Abstract, that a reference signal is transmitted from a base station to one or more field units (i.e. radio stations) and a message is also transmitted over a paging channel to indicate a transmission power level).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the Wheatley and Ozluturk invention by employing the teaching as taught by Nelson to provide a power level and identification in the broadcast signal. The motivation for the combination is given (by Nelson, par. 0010, where the invention is directed towards enhancing the utilization of resources (e.g. power) in a wireless communication system).

7. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wheatley in view of Ozluturk as applied to claim 19 above, and further in view of publication number US 2004/0166887 A1 to Laroia et al. (hereinafter Laroia).

With regard to claim 24, Wheatley and Ozluturk do not explicitly teach the limitation "wherein during the broadcasting of the broadcast signals, no messages are transmitted by the second radio access point to radio stations located within the radio coverage area of the second radio access point." However, attention is directed to Laroia (which teaches, Abstract, where a pilot is transmitted in a sector while no pilot is transmitted in the adjoining sector).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the Wheatley and Ozluturk invention by employing the teaching as taught by Laroia to provide the ability for the second access point to not transmit any messages during the broadcast by the first access point. The teaching of Laroia is directed to sectors; however, a similar approach could be implemented across cells, as one of ordinary skill in the art would appreciate. The motivation for the combination is given (by Laroia, par. 0003, where the invention is directed to wireless communications systems and methods of performing measurements of channel conditions).

8. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wheatley in view of Ozluturk as applied to claim 19 above, and further in view of patent number US 7209748 B2 to Wong et al. (hereinafter Wong).

With regard to claim 27, Wheatley and Ozluturk do not explicitly teach the limitation "wherein prior to broadcasting broadcast signals, the first radio access point

uses a message to request from a network-side device permission to broadcast the broadcast signals." However, attention is directed to Wong (which teaches Abstract, that a node (i.e. AP) transmits a request to a central control station (i.e. network side device). In response to the request, the central control station transmits a grant signal to the node to allow it to transmit its data).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the Wheatley and Ozluturk invention by employing the teaching as taught by Wong to provide the ability for the access point to send a message to request from a network side device permission to broadcast. The motivation for the combination is given (by Wong, col. 1 lines 25-30, where the invention pertains to two-way paging).

Claim(s) 28 is/are rejected for the same reasons as set forth in claim 27 above, because they have similar limitations.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KASHIF SIDDIQUI whose telephone number is (571)270-3188. The examiner can normally be reached on Monday through Thursday 7:30-18:00 (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kent Chang can be reached on (571)272-7667. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KASHIF SIDDIQUI
Examiner
Art Unit 2617

/Kent Chang/
Supervisory Patent Examiner, Art Unit 2617